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Discussion

DR. FREDERICK L. GREENE (Columbia, South Carolina): President Thompson, Secretary Copeland, I want to thank Dr. Hoffman and his group for sending me the manuscript before this meeting and congratulate them for a wonderful presentation.

There are many variables that we could look at, both for postoperative standard open colectomy and laparoscopic colectomy. The most important variable, I think, though, is the surgeon doing the procedure. And, unfortunately, we have never even had a standard for open surgical procedures, so we are starting a little behind the eight ball. We need to develop a standard for those, as well as standards for laparoscopic colectomy.

I appreciate very much the wonderful work that the Norfolk group has done. They have placed their patients into a registry that Dr. Robert Beart and I developed approximately 5 years ago and we have recently published. We asked an important question. We asked that question in that registry, "Did you violate oncologic principles with your laparoscopic approach?"

Surprisingly, a few surgeons actually answered the question. And I think we need to continue to look at this very critically as we think about doing these types of procedures. I feel very strongly these procedures should be done under Institutional Review Board control and in prospective studies, and I think the authors agree with that.

I was in Germany last week, directing a course on laparoscopic colectomy for German surgeons, and I was delighted to hear that the group in Erlangen had put together a marvelous prospective study on this question for the entire country of Germany. I want to report to you today, however, that I am saddened to say that the entire study has been abandoned, because under the new German system that is going to begin, in a few weeks, there will be no reimbursement for any patients in clinical trials. I tell you that also because some pundits have felt that we should accept the German system in this country. But I think that we need to push on for clinical trials, certainly.

I have a few questions.

George, you mentioned port site recurrence. This has been an interest of ours. Is it a material risk now? Should we actually discuss this with patients? If we are going to do laparoscopic colectomy or laparoscopic cancer surgery about the problems of port site recurrence, should this be part of our discussion?

I am concerned about missed lesions. You had several small lesions, and there have already been reports of surgeons going in and taking out the wrong part of the colon because we cannot feel it. What is the role for intraoperative colonoscopy? And, also, what is the role for preoperative staining with colonoscopy to make sure we do not take out the wrong area?

In your writings, you have said that your conversion rate is 20% to 25%, but you did not tell us anything about the conversion rate, and I really did not see it in the manuscript. How many of these patients were converted to an open colectomy?

I was also surprised in your manuscript that you are leaving your mesenteric defect open. I was taught to close mesenteric defects. But, you know, it is interesting. Our colleagues in Germany, according to some of them I met recently, are leaving mesenteric defects open, even in open cases. I would ask you, are you leaving the defect open in your open cases now because you are doing it laparoscopically?

I am concerned about the pneumoperitoneum in these patients, and maybe that is a reason for port site recurrence. What is your experience with gasless techniques? Is this the way that we should go without using pneumoperitoneum?

And, finally, one of my most memorable experiences was as a young research fellow at St. Marks, I had the opportunity to have tea with Cuthbert Dukes. We owe Dr. Dukes a lot. But I would suggest through, certainly, my work in the Commission on Cancer and with the American Joint Committee on Cancer (AJCC), that we really need to use the TNM system. The TNM system allows us to talk the same language with our colleagues all over the world.

I appreciate the opportunity of discussing this and, again, appreciate the wonderful opportunity of being a member of this organization.

Thank you.

DR. BRUCE D. SCHIRMER (Charlottesville, Virginia): President Thompson, Secretary Copeland, Members, and Guests. I rise also to congratulate Dr. Hoffman and his colleagues on a very timely report about what is currently perhaps the most controversial topic in the area of minimally invasive surgery, and that is the use of laparoscopic-assisted colectomy to treat carcinoma of the colon. I wish to thank the authors for asking me to discuss the paper and for supplying me with a copy of the manuscript ahead of the meeting.

The Norfolk surgical group has shown us today that in their hands this was an appropriate application of the minimally invasive surgical technique. However, I wish to point out to the Society that this report should not in any way temper our already cautious attitude toward the application of minimally invasive surgery to treating colon carcinoma.

This group has already presented data to the Society confirming that they are experts in accomplishing this procedure. And I believe it was their ability to perform the procedure so well that led to the extremely low recurrence rates that were reported today.

This degree of laparoscopic expertise may not be present in all surgical practices, and I am concerned that the random application of laparoscopic techniques by less skilled laparoscopic surgeons could lead to an excessive recurrence rate of tumor, both within the peritoneal cavity and at port sites.

A recently published study by Jones and the group at the Barnes Hospital showed that when tumor is injected into the peritoneal cavity the presence of a pneumoperitoneum results in increased tumor site implantation at port sites. And so I think it is very likely that the actual cutting into the tumor surface by the surgeon during the course of the operation is perhaps responsible for tumor implantation that we are seeing after a laparoscopic-assisted colectomy.

It is my belief that the merits of the laparoscopic approach to this operation will prove to survive this criticism. And I think in 1995 we are currently seeing the same sort of concern about a particular complication related to this procedure, *i.e.,* port site recurrence, that we were seeing in 1992 regarding bile duct injury after laparoscopic cholecystectomy.

Dr. Hoffman's group are contributing their data to prospective randomized trials and I think that all of us who are considering or doing such procedures should also do the same. And I commend them for doing that.

Dr. Hoffman, I have one question for you that was not already asked by Dr. Greene, and that is: If in the course of the operation the surgeon does find a tumor is more advanced than suspected or the situation arises where the surgeon determines that he or she has cut into the tumor surface, what at that point should be done to prevent potential port site or wound site recurrences of the tumor?

I want to thank the Association very much for the privilege of discussing this paper.

DR. PHILLIP DEAN (Birmingham, Alabama): Thank you, Mr. President, Mr. Secretary, Members, and Guests of the Association. Dr. Hoffman and his co-authors should be commended on an excellent paper and on pursuing a clinically relevant and a very important question regarding such a new procedure as laparoscopic colon cancer resection. Certainly they and other groups, including our recent series of 120 segmental laparoscopic colon resections, have demonstrated that the procedure itself is safe. It may in fact have significant benefit to patients, both in terms of the short-term and long-term follow-up, and it may in fact in the future represent significant cost savings.

Certainly, the principal concern in operating on patients for colon cancer, however, is not short-term pain or the length of the incision and scar. The major concern is optimizing the oncologic outcome. As Dr. Hoffman has suggested, and as Dr. Schirmer has reiterated, there is a significant concern about laparoscopic colon cancer resection with regard to a poor oncologic outcome.

A number of case reports, letters to the editors, in literature have suggested a higher rate of port site recurrence as well as local recurrence, and I think the only way to reasonably answer this question is with a prospective randomized trial similar to that being sponsored by the National Cancer Institute and carried out by Heidi Nelson at the Mayo Clinic. And I encourage everyone doing this procedure to participate in a study such as this.

This is, however, a very nice series, and it is the first series I am aware of addressing the relatively long-term follow-up after a laparoscopic colon cancer resection. Although the numbers are small, as Dr. Hoffman indicated, I think the results of this series are important. A 2-year follow-up is certainly reasonable in that most colon cancer recurrences will occur within 2 years, and they have clearly shown that there is at least not a dramatic increase in the recurrence rate at 2 years.

I have two questions, Dr. Hoffman, that I did not get from your presentation. First, regarding adjuvant therapy for your colon cancer patients, did the patients in Dukes' stage B and the Dukes' stage C lesions receive adjuvant chemotherapy or radiation therapy? And if so, how many of these people received that therapy?

The second question was already hinted at by Dr. Schirmer. But I was wondering if you are participating in a prospective randomized trial or entering your patients into that kind of a data bank regarding this procedure.

I would like to thank the Association and its members for allowing me the privilege of discussing this paper.

DR. G. WILKINS HUBBARD (Closing Discussion): President Thompson, Secretary Copeland, Members, and Guests. Thank you for the opportunity to close this paper.

At the beginning of your remarks, Dr. Thompson, you referenced a quotation from the book of Genesis. I find an admonition from King Solomon and the Book of Proverbs to be equally valuable at this time. And that is, "There is a way that seems right unto man but in the end is death." There are many things that may seem right to us as surgeons in what we are doing. It is incumbent on us as scientists to prove that what we are doing is right on behalf of our patients.

Dr. Greene, Dr. Schirmer, Dr. Dean, thank you for your comments. I will try to answer your questions.

Peripheral, perhaps, to the discussion of colon cancer, the question that Dr. Greene raised with regard to standardization of the procedure is certainly an appropriate one. We have attempted to address this question by looking at the learning curve of how long it takes a surgeon to be able to do this procedure. We hope that some of these data will help us in credentialling surgeons in the future.

It seems that it takes more cases to be proficient in colon surgery than it does in biliary tract surgery. It is our impression that it takes between 35 and 50 cases for a surgeon before he is facile with performing a laparoscopic colectomy.

We also are concerned about the issues of preoperative informed consent. Certainly, anything that is a known risk is fair game and should be related to the patients. So we do have discussion with our patients about concern for port site recurrence, and we tell them that that risk, as far as we know, is less than 2% at this time.

The conversion rate was another question I believe Dr. Greene asked. In our 39 patients, we had seven patients who were converted, or 19%. Of the 240 colectomies that we have performed for malignant disease as well as nonmalignant disease, that rate has persisted at approximately 20%.

With regard to the mesenteric defect, we often do not close the mesenteric defect in open cases, and this perhaps made the decision not to close the mesenteric defect in laparoscopic cases a more palatable one for us.

We have had no experience using the gasless technique, but I would like to comment that it is interesting that thoracoscopic procedures for lung cancer also seem to have some incidence of port site tumor implantation. So the notion that it may simply be related to a pressure phenomenon forcing tumor cells into the subcutaneous tissue may not entirely be the explanation.

We certainly agree with the value of using the TNM classification, although we have not presented that with our data.

Dr. Schirmer, with regard to dealing with the issue of whether or not we have crossed tumor in the dissection, and how we handle that? First of all, I usually handle that by having Dr. Hoffman scrub with me. He keeps me from doing that. In the event that we are concerned about our surgical margin, for example, tumors that may be attached to the anterior abdominal wall, we make every effort to perform this in the same way that we would as an open case, taking an appropriate margin. But in the event that we are concerned about that, we would irrigate the abdomen carefully, and we would not change our approach except to be careful to irrigate the port sites.

Dr. Dean, thank you for your comments as well. The outcomes data are going to be important for all of us, no matter what type of surgical procedure we are doing. I think that this is our attempt to establish early outcomes data.

You know, if a procedure is in its rudimentary stages, you would sure like to know early on if it is hurting patients before persisting for a long period of time before deciding not to do it. For that reason, we pursued this investigation in a retrospective way before deciding to enter into doing more of these cases in a prospective fashion. And to that end, we have joined the National Cancer Institute protocol and are entering our patients with the prospective study.

With regard to the question of adjuvant therapy, all of our node-positive patients were offered chemotherapy. Eleven were treated, and I think it is too early for us to determine the absolute outcome of that.

I would like to thank the Society for the opportunity to close this paper.